

A Study on Supply Chain Management in Textiles Industry

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ABSTRACT

The Textile industry is a long chain including raw materials production, complement production, clothing production and so on. SCM concept is made possible as a conventional management tool for all manufactures are to strive to improve their product quality, to reduce their product and service cost and to shorten their product delivery and response time in a highly competitive market.. Modern SCM concept comprises of a variety of activities, namely inbound and outbound transportation management, warehousing, materials handling, order fulfillment, network design, inventory management, supply/demand planning, customer service, sourcing and procurement, packaging, and management of IT support towards diverse functional areas. India is becoming a global manufacturing hub in textiles. Increasing demand in domestic and international markets is opening a new world of opportunities for the Indian Industry especially from Coimbatore region of Tamil Nadu.

Keywords: Textile industry Supply Chain Management, Global manufacturing, Indian manufacturers

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INTRODUCTION AND PROBLEM DEFINITION

The term 'supply chain management' has not only been used to explain the logistics activities and the planning and control of materials and information flows internally within a company or externally between companies (Christopher 1992, Cooper et al., 1997 and Fisher, 1997). Researchers have also used it to describe strategic, inter organizational issues (Cox, 1997, Harland et al., 1999), to discuss an alternative organizational form to vertical integration (Thorelli, 1986 Hakansson and Snehota, 1995), to identify and describe the relationship a company develops with its suppliers (Helper, 1991 and Hines, 1994, Narus and Anderson, 1995), and to address the purchasing and supply perspective (Morgan and Monczka, 1996 and Farmer, 1997). In the current competitive scenario supply chain management assumes a significant importance and calls for serious research attention, as companies are challenged with finding ways to meet ever-rising customer expectations at a manageable cost.

India's textiles sector is one of the oldest industries in Indian economy dating back several centuries. Even today, textiles sector is one of the largest contributors to India's exports with approximately 11 per cent of total exports. The textile industry is also labor intensive and is one of the largest employers. The textile industry has two broad segments. First, the unorganized sector consists of handloom, handicrafts and sericulture, which are operated on a small scale and through traditional tools and methods. The second is the organized sector consisting of spinning, apparel and garments segment which apply modern machinery and techniques such as economies of scale.

The Indian textiles industry, currently estimated at around US\$ 108 billion, is expected to reach US\$ 223 billion by 2021. The industry is the second largest employer after agriculture, providing employment to over 45 million people directly and 60 million people indirectly. The Indian Textile Industry contributes approximately 5 per cent to India's Gross Domestic Product (GDP), and 14 per cent to overall Index of Industrial Production (IIP). Considering the importance of textile sector in Indian Trade effectiveness, the present study has been made with reference to the Coimbatore region the factors defining the import and export supply chain management.

TEXTILE SECTOR SUPPLY CHAIN MANAGEMENT: AN OVERVIEW

Supply chain management is the oversight of materials, information, and finances as they move in a process from supplier to manufacturer to wholesaler to retailer to consumer. Supply chain management involves coordinating and integrating these flows both within and among companies. It is said that the ultimate goal of any effective supply chain management system is to make products available when needed.

The supply chain of a typical textile industry consists of:

- Raw materials
- Ginning facilities
- Spinning and extrusion processes
- Processing sector
- Weaving and knitting factories
- Garment manufacturing

The driver behind Supply Chain Management is to remove inefficiencies, excess costs and excess inventories from the supply pipeline which extends from the customer back through his suppliers and through his suppliers' suppliers and so on back. By having the program driven by the customer, it is hoped that inventories, caused by uncertainties and slow response, will be significantly eliminated. While there are sales incentives to major suppliers with the carrot of category management or similar programs, the success of supply chain management rests with logistics.

Functional areas of Logistics:

1. Network Design
2. Information Technology
3. Transportation
4. Inventory and Storage
5. Warehousing
6. Materials Handling, Loading and unloading
7. Packaging and Re-packaging

SAMPLES OF EARLIER STUDIES

Analytically, a typical supply chain is simply a network of materials, information and services processing links with the characteristics of supply, transformation and demand. It is the collection and interaction of these elements that impact system-level qualities, properties, characteristics, functions, behavior, and performance *Cloutier et al.*,

FACTOR ANALYSIS: KAISER-MEYER-OLKIN (KMO) MEASURE OF SAMPLING ADEQUACY

After thorough review of literature and brainstorming sessions ten variables that are affecting investment import and export supply chain management of textiles in Coimbatore region are identified. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy has been used to gauge the appropriateness of factor analysis approach.

TABLE-1 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.762
Bartlett's Test of Sphericity	Approx. Chi-Square	6586.52
	Df	49
	Sig.	.001

KMO Measure of Sampling Adequacy value is 0.762 which means that all the variables are positively correlated. Bartlett's test of Sphericity significance value is less than 0.05 and hence it is concluded that Factor Analysis can be performed for these variable.

COMMUNALITIES

Communalities of all variables are extracted by following the method of Principal Component Analysis. The Communalities of all variables are as follows.

TABLE - 2 COMMUNALITIES

Factors	Initial	Extraction
Capital	1.000	.627
Trade Procedures	1.000	.633
Orders	1.000	.712
Tax and duties	1.000	.685
Technology	1.000	.565
Demand	1.000	.666
Workforce	1.000	.727
Initiative/Innovation	1.000	.791
Supply/delivery	1.000	.663
Government Policy	1.000	.747

Extraction Method: Principal

Enterprises create and deliver products and services through increasingly global and complex supply chains, *Binder and Clegg and Basole and Rouse*. The hyper competitive nature of today's business environment, however, requires enterprises to continuously seek ways to decrease operational costs, provide satisfactory customer service, and minimize existing and anticipated disruption risks by designing and managing efficient supply chains.

Trkman & Groznik primarily point out that an efficient Logistics and Supply Chain Management is crucial for survival in a turbulent world. *Deman & Tuyishime* considers India as an emerging economy with major challenges to managing an effective supply chain system. They argue that the concept of SCM is still nascent in the country and explore the opportunities and tools of effectively managing the same. *Srivastava* provides with a snapshot of present logistics infrastructure in India. In his study, he insists upon collaboration and strategic alliances for successfully managing the show. *Reddy & Raju* perceive that an efficient supply chain makes business houses competitive and sustainable. However, they justify that regardless of extensive research carried out in the area of Supply Chain Management all over the world, SCM practices have not yet been well adopted in developing nations like India.

OBJECTIVES OF THE STUDY

1. To identify the factors defining the import and export supply chain management of textiles in Coimbatore region.

Component Analysis

It is visible from the above table that all the communalities are over and above the minimum threshold value of 0.5. Hence all the variables are retained. The following table gives a complete picture of factor extraction.

TABLE-3 TOTAL VARIANCE EXPLAINED

Component	Initial Eigen values			Extraction Sums of Squared			Rotation Sums of Squared		
				Loadings			Loadings		
	% of		Cumulative	% of		Cumulative	% of		Cumulative
	Total	Variance	%	Total	Variance	%	Total	Variance	%
1	7.030	37.001	37.001	7.030	37.001	37.001	4.094	21.549	21.549
2	2.705	14.236	51.236	2.705	14.236	51.236	3.582	18.853	40.403
3	1.847	9.720	60.956	1.847	9.720	60.956	3.154	16.602	57.005
4	1.628	8.575	69.531	1.628	8.575	69.531	2.378	12.527	69.531
5	.930	7.896	77.430						
6	.798	7.201	84.632						
7	.647	5.405	90.037						
8	.603	4.175	94.212						
9	.508	3.672	97.884						
10	.462	3.116	100						

Factors	Component			
	1	2	3	4
Capital	.328	.674	-.222	.128
Trade Procedures	.464	.577	.291	.000
Orders	.666	-.295	-.240	-.353
Tax and duties	.730	-.136	-.358	-.073
Technology	.288	-.629	-.266	-.127
Demand	.701	-.229	-.123	-.325
Workforce	.640	-.418	.003	.377
Initiative/Innovation	.773	.107	-.246	.349
Supply/delivery	.770	-.051	.097	-.243
Government Policy	.697	.217	.405	-.224

Extraction Method: Principal Component Analysis. a. 4 components extracted

The above table gave an indicative list of factor loadings before rotation. All the ten variables are loaded on various factors. In order to unearth the underlying structure among the variables, Rotated Component matrix is attained and the loadings of all the variables on Four Factors are shown in the following table.

ROTATED COMPONENT MATRIX**TABLE-5 ROTATED COMPONENT MATRIX**

Factors	Component		
Capital	.794	.201	.160
Trade Procedures	.024	.634	.489
Orders	.712	.209	.082
Tax and duties	.337	.650	.248
Technology	.362	.222	.663
Demand	.710	.224	.116
Workforce	.646	-.748	-.188
Initiative/Innovation	.286	.443	.657
Supply/delivery	.656	.267	.225
Government Policy	.338	.649	.346

**Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.**

From the above table only those factor loadings which are greater than or equal to 0.5 are considered. It can be seen in the above table that Capital, Orders, Demand, Workforce and Supply/Delivery are loaded on First Factor. Based on the underlying relationship among these five variables, this Factor is named as Trade Related Internal Factors. On the Second Factor, three variables namely Trade Procedures, Tax and Duties and Government Policy are loaded. Based on their underlying relationships, this Factor is named as Trade Related External Factors. On the Third Factor, two factors namely Technology and Initiative and Innovation are loaded. This factor is named as Expertise.

CONCLUSION

Suppliers are viewed as critical resources for the textile/apparel retailers. They have to be managed to derive the maximum potential in the supply chain, and the selection of the supplier is the most critical task in the supply management. The study undergone so far on Supply Chain Dynamics in India renders a clear picture about the state of affairs and the respective factors defining the import and export supply chain management in textiles in the Coimbatore region. There are many more areas and issues that have not been able to be spaced out here and many, which that the respective stake-holders and reformers would be open to. All that require mentioning is that there is a governing body in place, which is, or if not, should be committed to deliver on its promise of mapping Indian logistics in global platform. That's why, it's a time to think, plan, manage and re-act and together we could envisage in ushering in a new logistics and supply chain era in the country.

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